

## REMARKS

Applicant requests reconsideration and further examination of Application Number 10/689,478. Specifically, applicant requests consideration of the above amendments and the following remarks in response to November 13, 2008 Office Action.

### I. CURRENT CLAIM SET

With this submission, no new matter has been added to the above-referenced application.

Claims 1, 4-5, 14, 17-19, 24, 27-28, 38, 42, 45-46, 54, 57 and 61 have been amended with this submission. Claim 1 is amended to specify the first film layer as thermoplastic and to specify the fourth film layer as thermoplastic; claim 4 is amended in light of the amendments to claim 1, specifying the fourth film layer as thermoplastic; claim 5 is amended in light of the amendments to claim 1, specifying the fourth film layer as thermoplastic; claim 14 is amended in light of the amendments to claim 1, specifying the fourth film layer as thermoplastic; claim 17 is amended in light of the amendments to claim 1, specifying the fourth film layer as thermoplastic; claim 18 is amended in light of the amendments to claim 1, specifying the first film layer as thermoplastic; claim 19 is amended in light of the amendments to claim 1, specifying the fourth film layer as thermoplastic. Claim 24 is amended to specify the first film layer as thermoplastic and to specify the fourth film layer as thermoplastic; claim 27 is amended in light of the amendments to claim 24, specifying the fourth film layer as thermoplastic; claim 28 is amended in light of the amendments to claim 24, specifying the fourth film layer as thermoplastic; claim 38 is amended in light of the amendments to claim 24, specifying the first film layer as thermoplastic and the fourth film layer as thermoplastic. Claim 42 is amended to specify the first film layer as thermoplastic and to specify the fourth film layer as thermoplastic; claim 45 is amended in light of the amendments to claim 42, specifying the fourth film layer as thermoplastic; claim 46 is amended in light of the amendments to claim 42, specifying the fourth film layer as thermoplastic. Claim 54 is amended to specify the first film layer as thermoplastic and to specify the fourth film layer as thermoplastic; claim 57 is amended in light of the amendments to claim 54, specifying the fourth film layer as thermoplastic; claim 61 is amended in light of the amendments to claim 54, specifying the fourth film layer as thermoplastic.

Basis for each amendment is found at Page 12 line 13 – Page 13 line 10 of the original application as filed, corresponding to Paragraphs 52 and 53 of the original application as published.

and Page 13 line 29 – Page 14 line 8 of the original application as filed, corresponding to Paragraph 55 of the original application as published. Exemplary excerpts from these portions of the application explain:

As used herein, the term "optical ablation" refers a method of localized vaporization or decomposition of polymeric materials by means of a controlled laser beam which can be used to form a groove or score-line in a thermoplastic materials [sic]. (Page 12 lines 13-15 of the original application as filed, emphasis added.)

Preferably, the wavelength is selected on the basis of absorption capacity for a particular thermoplastic material forming a specific layer in a multilayer packaging film. (Page 13 line 4-6 of the original application as filed, emphasis added.)

The surface-roughened portion may be formed by mechanical means, e.g., subjecting the external surface of the film layer to knurling by a roller formed with a plurality of circumferentially extending projections . . . . Alternatively, non-mechanical methods may be used which include corona discharge, plasma discharge, ultrasonic wave, and optical ablation. (Page 14 lines 4-8 of the original application as filed, emphasis added.)

As applicant has previously explained in prior responses, the multilayer packaging film of the present application comprises four separate, distinct layers with distinct materials, features and characteristics. For example, the external surface of the first film layer comprises a surface-roughened portion, and the external surface of the fourth film layer comprises at least one score-line. As explained above, a surface-roughened portion and a score-line may be formed by optical ablation, using laser beam wavelengths selected on the basis of the particular thermoplastic material forming the first film layer with a surface-roughened portion and the particular thermoplastic material forming the fourth film layer with a score-line.

Claims 2-3, 6-8, 12-13, 15, 25-26, 43-44, 47-49, 51, 55-56, 58-59 and 62-64 are original.

Claims 9-11, 16, 20-23, 29-37, 39-41, 50, 52-53, 60 and 65-67 have been previously presented.

Claim 68-81 are new. Claim 68 is identical to claim 1, as amended, with the exception that in claim 68 the first film layer comprises a polymer (not necessarily a biaxially-oriented polymer). Basis for claim 68 is found at Page 8 lines 6-9, Page 14 lines 9-26 (particularly lines 22-24), Page 15 lines 1-17 (particularly lines 9-11) and Page 15 line 18 – Page 16 line 18 of the original application as filed, corresponding to Paragraphs 39, 56, 57 and 58, respectively, of the original application as published. Claims 69-81 depend from claim 68. Basis for each of these dependent claims is found in the basis for claim 68 outlined above as well as in the original application as follows:

Claim	Additional Basis
69	Page 9 lines 5-10 (as filed); Paragraph 43 (as published)
70	Page 6 lines 19-21 (as filed); Paragraph 26 (as published)
71	Page 6 lines 16-17 (as filed); Paragraph 26 (as published)
72	Page 6 lines 17-19 (as filed); Paragraph 26 (as published)
73	Page 6 lines 22-24 (as filed); Paragraph 26 (as published)
74	See basis for claim 68 described above
75	See basis for claim 68 described above
76	Page 9 lines 14-15 and Page 9 line 29 – Page 10 line 2 (as filed); Paragraphs 44 and 45 (as published)
77	Page 9 lines 14-15 and Page 10 lines 6-9 (as filed); Paragraphs 44 and 46 (as published)
78	Page 5 lines 20-21 (as filed); Paragraph 22 (as published)
79	Page 5 lines 22-23 (as filed); Paragraph 22 (as published)
80	Page 6 lines 25-26 (as filed); Paragraph 27 (as published)
81	Figures 6 and 7; Page 20 line 17 – Page 21 line 9 (as filed); Paragraphs 68 and 69 (as published)

## II. APPLICANT'S RESPONSE TO NOVEMBER 13, 2008 OFFICE ACTION

In applicant's July 25, 2008 response to the January 25, 2008 office action, applicant reviewed the present application, the prosecution history and the cited prior art. This May 13, 2009 response to the November 13, 2008 office action is a thorough review, on a point-by-point basis, of the Examiner's comments in the November 13, 2008 office action.

Paragraph 2 of the November 13, 2008 Office Action states that Claims 1-13 and 17-23 are rejected under 35 USC §103(a) as allegedly being unpatentable over Andersen et al. (US Patent 5,660,903) (Andersen) in view of Notomi et al. (US Patent 3,985,849) (Notomi).

For claim 1, the Examiner then states,

With regard to Claim 1, Andersen et al disclose a laminate (column 4, lines 44-47), therefore adhered by adhesive lamination, comprising layers of film (sheets; column 4, lines 44-47) for packaging, which are flexible (column 13, lines 45-60), therefore having an internal surface and external surface; comprising a polymer (column 7, lines 9-11), comprising polyvinyl alcohol (column 24, lines 31-39) comprising a surface-roughened portion, therefore on an external surface or score lines for the purpose of bending the film (column 13, lines 31-45); the film is [sic] laminated to at least one layer of polyamide (column 81, lines 54-61). . . .

Responding to each point in turn, applicant states as follows:

-- "Andersen et al disclose a laminate (column 4, lines 44-47)". Column 4 lines 44-47 make no mention of a laminate. This section of Andersen reads as follows:

Man has made great use of essentially nondepletable inorganic materials such as clay, natural minerals, or stone for millennia. Clay has found extensive use because of its ready moldability into a variety of articles including

Applicant submits that during the February 9, 2007, the Examiner may have commented that the reference to column 4 lines 44-47 was incorrect and was instead to be a

reference to column 7 lines 44-47. However, the Examiner has yet to provide written correction or confirmation of this alternative reference.

Assuming the reference to support Andersen's alleged disclosure of a laminate is, in fact, Column 7 lines 44-47, Column 7 lines 44-47 of Andersen do nothing more than provide a shopping list of uses for Andersen and read as follows:

The highly inorganically filled sheets can be printed, coated, laminated, layered, crimped, creped, stretched, stamped, convoluted, spiral wound, pressed, folded, fluted, corrugated, and glued much like paper or paperboard.

The Examiner has failed to provide any reason, other than impermissible hindsight, for applicant to select laminating or layering the sheet instead of printing, coating, creping, etc. the sheet.

- "therefore adhered by adhesive lamination". The Examiner provides no support in Andersen or elsewhere for concluding that the alleged laminate option in Andersen is adhered by adhesive lamination. Andersen uses the word "adhesive" in discussing inorganic materials which are added to adhesives to impart certain properties to a cured product (see Column 6 lines 5-8), in discussing fibers which have released lignins and hemicellulose with adhesive ability (see Column 9 lines 16-19), in discussing using the sheet to form shaped containers (e.g., cups, "clam shell" containers, french fry containers, frozen food boxes and cold cereal boxes) which may need to have the ends or seams glued together to retain the container shape (see Column 14 lines 1-11, Column 65 lines 45-47, Column 67 line 64 – Column 68 line 3, Column 68 lines 12-18, Column 68 line 21-27 and Column 68 lines 30-35), and in discussing the "nonadhesive effects" or the "low adhesiveness" of the moldable mixture in relation to the rollers used to manufacture the sheets (see Column 50 lines 42-46, Column 61 lines 21-22, Column 61 lines 64-66, Column 63 lines 14-16, Column 63 lines 54-56 and Column 64 line 66 – Column 65 line 1). Additionally, Andersen includes a general discussion regarding coatings. This discussion begins as follows:

It may be preferable to apply coatings or coating materials to the highly inorganically filled sheets prepared according to the processes set forth above. Coatings can be used to alter the surface characteristics of the sheet in a number of ways, including sealing and protecting the sheet or other object made therefrom. Coatings may provide protection against moisture, base, acid, grease, or organic solvents. They may also provide a smoother, glossier, or scuff-resistant surface and help to prevent fiber "fly away." Coatings can be used to reinforce the wet inorganically filled sheet during the sheet processing stage, or they may strengthen and reinforce a dry sheet, particularly at a bend

or fold line. Some coatings can also be utilized as adhesives or to form laminated sheets. (Column 56 lines 9-21, emphasis added.)

However, even in this discussion regarding coatings, Andersen does not clearly disclose adhesive lamination. Instead, Andersen discloses the use of coatings as adhesives, arguably, not to laminate but perhaps to protect the sheet or to protect a bend or fold in the sheet. And, in using an "or" (as emphasized above), Andersen discloses the use of, arguably, *non*-adhesive coatings to form laminated sheets.

-- "comprising layers of film (sheets; column 4, lines 44-47) for packaging". As above,

Column 4 lines 44-47 make no mention of a laminate comprising layers of film. This section of Andersen reads as follows:

Man has made great use of essentially nondepletable inorganic materials such as clay, natural minerals, or stone for millennia. Clay has found extensive use because of its ready moldability into a variety of articles including

Applicant submits that during the February 9, 2007, the Examiner may have commented that the reference to column 4 lines 44-47 was incorrect and was to be a reference to column 7 lines 44-47. However, the Examiner has yet to provide written correction or confirmation of this alternative reference.

Assuming the reference to support Andersen's alleged disclosure of a laminate

comprising layers of film is, in fact, Column 7 lines 44-47, Column 7 lines 44-47 of

Andersen do nothing more than provide a shopping list of uses for Andersen and read as follows:

The highly inorganically filled sheets can be printed, coated, laminated, layered, crimped, creped, stretched, stamped, convoluted, spiral wound, pressed, folded, fluted, corrugated, and glued much like paper or paperboard. (Emphasis added.)

The Examiner has failed to explain how the sheet of Andersen that can be treated "much like paper or paperboard" is analogous prior art for the flexible multilayer packaging film of the present application. The sheet of Andersen is

any substantially flat, corrugated, curved, bent, or textured sheet made using the methods described herein. The only essential compositional limitation is that the structural matrix of at least part of the sheet comprises a highly inorganically filled composite having a water-dispersable organic binder. The sheet may include other materials such as paper, organic coatings, ink, or other organic materials in addition to the highly inorganically filled/organic binder matrix portion. (Emphasis added.)

Andersen further explains the "highly inorganically filled composite" as follows:

The present invention relates to novel compositions and methods for the manufacture of highly inorganically filled compositions, which can generally be described as multi-

component, multi-scale, fiber-reinforced, micro-composites. (Column 16 lines 62-65, emphasis added.)

The term "multi-component" refers to the fact that the inorganically filled materials used to make the sheets of the present invention typically include three or more chemically or physically distinct materials or phases, such as fibers, inorganic aggregate materials, organic aggregate materials, organic polymer binders, rheology-modifying materials, hydraulically settable materials, water, other liquids, entrapped gases, or voids. (Column 17 lines 5-12, emphasis added.)

The term "multi-scale" refers to fact that the compositions and materials of the present invention are definable at different levels or scales. Specifically, within the inorganically filled materials of the present invention there is typically a macro-component composition in the range from about 10 nonometers [sic] to as high as about 10 mm, a micro-component composition in the range of about 1 micron to about 100 microns, and a submicron component. (Column 17 lines 21-28, emphasis added.)

The term "fiber-reinforced" is self-explanatory, although the key term is "reinforced", which clearly distinguishes the highly inorganically filled materials of the present invention from conventional paper or paper products. (Column 17 lines 32-35, emphasis added.)

Finally, the term "micro-composite" refers to the fact that the inorganically filled materials are not merely a compound or mixture but a designed matrix of specific, discrete materials on a micro-level, which are of different sizes, shapes, and chemical make-up. (Column 17 lines 44-48, emphasis added.)

Andersen, even if sheets of Andersen are laminated to other sheets, is clearly not a flexible multilayer packaging film comprising a first thermoplastic layer, a second film layer, a third film layer and a fourth thermoplastic film layer. Andersen, in fact, teaches away from plastics/thermoplastics:

Such sheets [having a highly inorganically filled organic polymer matrix] are less expensive and are more environmentally friendly than sheets made from conventional materials (such as paper, plastic, or metal). (Column 1 lines 27-30, emphasis added.)

Recently there has been a debate as to which of these materials (e.g., paper, paperboard, plastic, polystyrene, glass, or metal) is most damaging to the environment. (Column 2 lines 42-44, emphasis added.)

In fact, paper, paperboard, plastic, polystyrene, glass, and metal materials each has its own unique environmental weaknesses. (Column 2 lines 53-55, emphasis added.)

Another problem with paper, paperboard, polystyrene, and plastic is that each of these requires relatively expensive organic starting materials, some of which are nonrenewable, such as the use of petroleum in the manufacture of polystyrene and plastic. (Column 4 lines 22-26, emphasis added.)

Due to the more recent awareness of the tremendous environmental impacts of using paper, paperboard, plastic, polystyrene, and metal's for a variety of single-use, mainly disposable, items such as printed sheets or containers made therefrom (not to mention the ever mounting political pressures), there has been an acute need (long since recognized by those skilled in the art) to find environmentally sound substitute materials. In particular, industry has sought to develop highly inorganically filled materials for these high waste volume items. (Column 5 lines 48-57, emphasis added.)

Because highly inorganically filled materials essentially comprise such environmentally neutral components as rock, sand, clay, and water, they would be ideally suited from an

ecological standpoint to replace paper, paperboard, plastic, polystyrene, or metal materials as the material of choice for such applications. (Column 6 lines 12-17, emphasis added.)

Based on the foregoing, what is needed are improved compositions and methods for manufacturing highly inorganically filled organic polymer mixtures that can be formed into sheets and other objects presently formed from paper, paperboard, polystyrene, plastic, glass, or metal. (Column 6 lines 28-32, emphasis added.)

Unlike the manufacture of plastic or polystyrene, highly inorganically filled sheets utilize little or no petroleum-based products or derivatives as starting materials. Thus, although some amount of fossil fuel is necessary to generate the energy used in manufacturing the highly inorganically filled sheets, only a fraction of the petroleum used in the manufacture of polystyrene or plastic products will be consumed overall. (Column 10 lines 17-24, emphasis added.)

A polystyrene, plastic, or metal cup or can thrown into a lake or stream will last for decades, perhaps even centuries, while a container made from a highly organically filled sheet will decompose in a short period of time into essentially a dirt-like powder. (Column 10 lines 60-64, emphasis added.)

The highly inorganically filled sheets of the present invention can also substitute for sheets made from plastic, polystyrene, and even metal. (Column 17 lines 60-62, emphasis added.)

The sheets, containers, and other objects made therefrom are intended to be competitive in the marketplace with such articles currently made of various materials such as paper, plastic, polystyrene, or metals. (Column 20 lines 24-27, emphasis added.)

In addition, due to the unique properties of the inorganically filled materials, it is possible to make a variety of objects that presently require the use of plastics, polystyrene, or even metal. (Column 59 lines 64-67, emphasis added.)

In contrast, as previously explained in the February 20, 2007 pre-appeal brief, the flexible packaging film of the present application is, generally, plastic packaging. ASTM International defines plastic as "a material containing as an essential ingredient an organic substance of large molecular mass, which is solid in its finished state and, at some state in its manufacture or in its processing into finished articles, can be shaped by flow." (ASTM Standard D1695-96, Reapproved 2001, "Standard Terminology of Cellulose and Cellulose Derivatives.") Several ASTM standard test methods are noted and incorporated by reference into the present application. (Page 24 lines 1-10 of the original application as filed, corresponding to Paragraphs 82-91 of the original application as published.) Additionally, with this submission, to further distinguish the claims of the present application from Andersen, applicant has amended the claims to specify that the first film layer and the fourth film layer of the flexible multilayer packaging film are thermoplastic.

-- "which are flexible (column 13, lines 45-60), therefore having an internal surface and external surface". Column 13 lines 45-60 of Andersen read as follows:

In addition, coatings can be applied to the surface of the sheet for a number of reasons, such as to make the sheet more waterproof, more flexible, or to give it a glossier surface. Coatings based upon materials such as soybean oil or Methocel® (available from Dow Chemical), either alone or in combination with polyethylene glycol, can be applied to the surface in order to permanently soften the sheet or a hinge area within the sheet. Elastomer, plastic, or paper coatings can aid in preserving the integrity of the hinge whether or not the underlying hardened structural matrix fractures upon bending at the hinge. In the case of packaging containers, it may be desirable to print the sheets or otherwise attach indicia or logos on the surface, such as by embossing or engraving the surface. The printed sheets may also be used in magazines, brochures, or other reading materials. (Emphasis added.)

Applicant assumes that the Examiner cites this section of Andersen for the reference to "more flexible" and also, perhaps, "hinge." It appears, however, that the Examiner has failed to also note the reference to the fracturing of the "underlying hardened structural matrix."

Throughout Andersen, Andersen refers to the sheet as, arguably, not flexible and teaches a sheet that is hardened, maintains its shape, is non-moldable, is brittle, is ruptured, is fractured, etc.:

The rolled sheets are dried in an accelerated manner to form a substantially hardened sheet, such as by heated rollers and/or a drying chamber. (Abstract, emphasis added.)

The score can be pressed into the surface of the sheet any time after it has been formed; that is, the score can be pressed into the sheet while in the green state, in a semi-hardened state, or after it has become fully dry. (Column 7 lines 51-54, emphasis added.)

Although the highly inorganically filled sheets may also include organic components, such as cellulose-based fibers and an organic binder, such components represent a much smaller fraction of the overall mass of the sheets compared to paper, and together will make up usually less than about 60% by volume of the total solids of the hardened inorganically filled sheet preferably, this fraction will be less than about 40% by volume of the solids, and more preferably less than about 30%. In most cases, it will be preferable for the fiber to be included in amount of from about 0.5% to about 50% by volume of the total solids of the hardened sheet, more preferably from about 5% to about 35%, and most preferably from about 15% to about 30%. The organic polymer binder will preferably be included in an amount in the range from about 1% to about 50% by volume of the total solids of the hardened sheet, more preferably from about 2% to about 30%, and most preferably from about 5% to about 20%. (Column 8 lines 19-36, emphasis added.)

The amount of added water is preferably just enough to provide adequate workability and moldability, while maintaining a mixture that is form stable: that is, a mixture which will maintain its shape during hardening after being manufactured into the desired shape. (Column 11 lines 18-23, emphasis added.)

However, the sheet must retain enough water before or during the compaction process in order for the inorganically filled matrix to remain moldable. Drying the sheet to the point



of nonmoldability before or during the compaction step could result in the creation of defects within the inorganically filled matrix. (Column 13 lines 9-14, emphasis added.)

Moreover, if less water is initially included in the moldable mixture, less water must be removed in order to cause the molded product or sheet to harden. (Column 25 lines 10-13, emphasis added.)

The type of aggregate can also affect the properties of the final hardened sheet. Aggregates comprising generally hard, inflexible, small particles such as clay, kaolin, or chalk, will generally result in a smoother sheet having an increased brittleness. Lightweight aggregates such as perlite or hollow glass spheres results in a sheet having lower density, lower brittleness, and greater insulating ability (Column 39 lines 23-29, emphasis added.)

In the absence of significant quantities of such waterproofing agents, water can be used to remoisten the sheet and temporarily increase the flexibility, bendability, and elongation before rupture of the sheet, particularly where the sheet will be formed into another article of manufacture, such as a container. (Column 39 lines 51-56, emphasis added.)

[D]uring the process of forming the sheet into an appropriate container or other object the bendability of the sheet can be temporarily increased by remoistening the sheet. . . . Upon drying the formed sheet, the level of bendability will generally decrease while the toughness and hardness of the sheet will generally increase. (Column 41 lines 44-52, emphasis added.)

High shear mixing results in a more uniformly blended mixture, which improves the consistency of the unhardened moldable mixture as well as increasing the strength of the final hardened sheet. (Column 43 lines 16-20, emphasis added.)

While some drying is advantageous, drying the sheet too quickly during the rolling process could result in the introduction of fractures and other flaws within the structural matrix. A drier sheet is less able to conform to a new shape without a rupture in the matrix compared to a wetter sheet subjected to the same level of shearing forces. (Column 49 lines 19-25, emphasis added.)

The temperature of the rollers, however, must not be so high as to dry or harden the surface of the sheet to the point which would create residual stresses, fractures, flaking, or other deformities or irregularities in the sheet. (Column 49 line 65 – Column 50 line 1, emphasis added.)

Fibers which are greater in length than the width of the fold or bend can act as a bridge to connect the material on either side of the fold or bend even if the matrix is partially or even substantially fractured along the fold or bend. (Column 51 lines 25-29, emphasis added.)

On the other hand, overdrying the sheet prior to the compaction step can yield a weaker sheet. At some point the inorganically filled sheet can become so dry and brittle that the inorganically filled matrix is no longer moldable and cannot be compressed without fracturing. The stressing of the structural matrix can diminish the final strength and other beneficial properties of the sheet even if the fractures are microscopic and not visible to the naked eye. (Column 54 lines 4-11, emphasis added.)

Since scoring generally (and perforation always) involves cutting through a portion of the structural matrix, the sheet can even be totally dry without the scoring or perforation process harming the sheet. However, in cases where a score is pressed rather than cut into the sheet surface, the sheet should be moist enough to prevent fracture due to the dislocation of the structural matrix. (Column 58 lines 12-19, emphasis added.)

At best, Andersen is unclear as to whether the final sheet of Andersen is flexible; at worst, Andersen teaches away from a flexible packaging material. In either case, the Examiner has failed to provide any reason, other than impermissible hindsight, for applicant to select the allegedly flexible sheet of Andersen over the nonflexible sheet of Andersen.

-- comprising a polymer (column 7, lines 9-11), comprising polyvinyl alcohol (column 24, lines 31-39)". Column 7 lines 9-11 make no mention of a polymer. This section of Andersen reads as follows:

The present invention relates to novel compositions and methods for the manufacture of highly inorganically filled compositions . . .

Andersen continues, at Column 7 lines 12-20 as follows:

which can generally be described as multi-component, multi-scale, fiber-reinforced, micro-composites. By carefully incorporating a variety of different materials (including inorganic aggregates, organic polymers, and fibers) capable of imparting discrete yet synergistically related properties, it is possible to create a unique class or range of micro-composites having remarkable properties of strength, toughness, environmental soundness, mass-productibility, and low cost. (Emphasis added.)

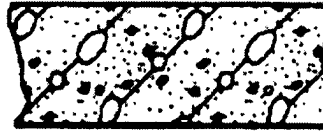
Applicant assumes that the Examiner is attempting to reference this section of Andersen (albeit with an incorrect specific reference) for the reference to "organic polymers."

Applicant respectfully requests that the Examiner provide written confirmation or correction of the specific reference he is citing.

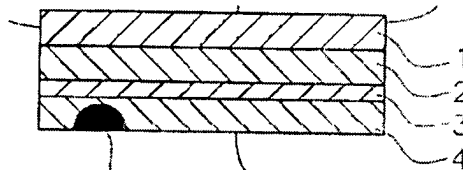
If applicant's assumption is correct (and it is the reference to "organic polymers"), applicant respectfully submits that, once again, the Examiner is applying impermissible hindsight analysis with applicant's claims as the recipe. The organic polymers referred to throughout Andersen are used as *synthetic organic binders* to hold together the inorganic aggregates and fibrous materials comprising a sheet comprising an inorganically filled matrix. As disclosed as Column 24 lines 31-39 (as cited by the Examiner for the reference to polyvinyl alcohol),

Finally, suitable synthetic organic binders that are water dispersable include, for example, polyvinyl pyrrolidone, polyethylene glycol, polyvinyl alcohol, polyvinylmethyl ether, polyacrylic acids, polyacrylic acid salts, polyvinyl acrylic acids, polyvinyl acrylic acid salts, polyacrylimides, ethylene oxide polymers, polylactic acid, and latex (which is a broad category that includes a variety of polymerizable substances formed in a water emulsion; an example is styrene-butadiene copolymer). (Emphasis added.)

A cross-section of the matrix/sheet of Andersen is seen in Figure 11 of Andersen, as depicted, in part, below.



From a review of the teachings of Andersen, the larger white circles represent the inorganic aggregates, the smaller dark circles represent the fibrous materials, and the open spaces in between represent the organic polymer binder holding together the inorganic and fibrous components. The Examiner has failed to explain how, other than through impermissible hindsight, the organic polymer binder of Andersen is the same as or even similar to the polymeric (and now, with the present amendment, thermoplastic) film layer of the claims of the present application (as shown, for example, by each of 1, 2, 3 and 4 in Figure 2 of the present application, as depicted below).



- "comprising a surface-roughened portion, therefore on an external surface or score lines for the purpose of bending the film (column 13, lines 31-45)". Column 13 lines 31-45 disclose that one sheet of Andersen may be textured or roughened and that the *same* sheet may also be scored, score cut or perforated. The purpose of the texturing or roughening in Andersen is not stated. The purpose of the score, score cut or perforation in Andersen is to create a line upon which the sheet can be bent.

In contrast, however, the claims of the present application teach that one layer is roughened while another, separate, distinct layer is scored. Such roughening *in combination with* such scoring is for an entirely dissimilar purpose (as compared to Andersen) As described at Page 3 lines 27-31 of the original application as filed (corresponding to Paragraph 13 of the original application as published),

Moreover, a flexible packaging film of the present invention may be *easily torn apart manually* when a surface-roughened portion on a first film layer and a score-line in a fourth film layer are configured so that they intersect an imaginary axis drawn between both first layer and fourth film layer and when the imaginary axis is perpendicular to the plane of the first film layer or the fourth film layer. (Emphasis added.)

Considering the entirely dissimilar purposes, the optional surface-roughening of a sheet comprising an inorganically filled matrix (as in Andersen) cannot be equated with the required surface-roughening of a first thermoplastic film layer (as in the claims of the present application) and the optional score-line of the same sheet comprising an inorganically filled matrix (as in Andersen) cannot be equated with the required score-line of a fourth (not first) thermoplastic film layer (as in the claims of the present application). Furthermore, Andersen provides no teachings regarding the necessary combination of a surface-roughened portion working and intersecting with a score-line. The sheet of Andersen may be roughened *and/or* it may be scored. Andersen provides no disclosure or teachings requiring both (as in the claims of the present application). In stating otherwise, the Examiner is applying impermissible hindsight analysis with applicant's claims as the recipe.

-- "the film is [sic] laminated to at least one layer of polyamide (column 81, lines 54-61)".

Column 81 lines 54-61 of Andersen are claims 47, 48 and 49. These claims read as follows:

47. A sheet as defined in claim 1, wherein the sheet is laminated together with at least one other sheet.

48. A sheet as defined in claim 47, wherein the at least one other sheet also includes an inorganically filled matrix.

49. A sheet as defined in claim 47, wherein the at least one other sheet is selected from the group consisting of organic polymer sheets, metal foils, fiber sheets, ceramic sheets, ionomers, elastomeric sheets, plastic sheets, cellophane sheets, *nylon sheets*, wax sheets, metallized films, and combinations of the foregoing. (Emphasis added.)

Applicant assumes the Examiner is citing these claims for the reference to "nylon sheets" (as various nylons are polyamides). Of interesting note, however, is that Andersen's only reference to nylon or polyamide is in claim 49. Andersen provides no details or enabling disclosure regarding these nylon sheets.

Additionally, Andersen provides very few teachings or enabling disclosure regarding the lamination of the sheet of Andersen to other sheets or layers. The teachings of Andersen regarding lamination / additional layers are limited to Claim 47 cited above and the following:

The highly inorganically filled sheets can be printed, coated, *laminated, layered*, crimped, creped, stretched, stamped, convoluted, spiral wound, pressed, folded, fluted, corrugated, and glued much like paper or paperboard. (Column 7 lines 44-47, emphasis added.)

It should be understood that higher tensile strength, as well as greater elongation, will generally be obtained by increasing the amount of fibers within the inorganically filled matrix. This can be accomplished by adding more fibers to the moldable mixture or, alternatively, by attaching a layer of fibers (such as a sheet of paper) on the surface or within the interior of a highly inorganically filled sheet, or by combining fibers having varying properties of strength and flexibility. (Column 41 lines 11-19, emphasis added.)

Some coatings can also be utilized as adhesives or to form laminated sheets. (Column 56 lines 20-21, emphasis added.)

It may sometimes be preferable to concentrate more fibers at the place in which the score cut or perforation will be made. This can be accomplished by co-extruding a second layer of highly inorganically filled material containing a higher fiber content at predetermined timed intervals to correspond with the location of the score cut or perforation. In addition, fibers can be placed on top of, or injected within, the sheet during the extrusion or rolling processes in order to achieve a higher fiber concentration at the desired location. (Column 57 line 65 – Column 58 line 7, emphasis added.)

Cold cups made according to Examples 46, 47, and 64 are passed through a commercial wax coating machine, whereby a uniform layer of wax is applied to the surface. The layer of wax completely seals the surface of the cup to moisture and renders it watertight. (Column 70 lines 29-33, emphasis added.)

Cold cups made according to Examples 46, 47, and 64 are coated with an acrylic coating using a fine spraying nozzle. Similar to the wax in Example 70, the layer of acrylic coating completely seals the surface of the cup to moisture and renders it watertight. The acrylic coating has the added advantage that it is not as visible as the wax coating. Because a thinner acrylic coating is possible, the cup looks almost as if it is uncoated. The glossiness of the cup can be controlled by using different types of acrylic coatings. (Column 70 lines 43-51, emphasis added.)

Cold cups made according to Examples 46, 47, 64 are coated with a commercially used melamine coating using a fine spraying nozzle. As in Examples 70 and 72, the layer of melamine coating completely seals the surface of the cup to moisture and renders it watertight. The melamine coating is also less visible and could be applied in a thinner coat compared to the wax coating. The glossiness of the cup can be controlled by using different types of melamine coatings. (Column 70 lines 54-61, emphasis added.)

From a review of these excerpts, the teachings of Andersen regarding lamination / additional layers are limited to the general, non-enabled teaching of a sheet comprising an inorganically filled matrix laminated to an organic polymer sheet, a metal foil, a ceramic sheet, an ionomer, an elastomeric sheet, a plastic sheet, a cellophane sheet, a nylon sheet or a metalized film (i.e, the non-enabled list from claim 49.); the general teaching of a sheet comprising an inorganically filled matrix laminated or layered in general; the general teaching of a sheet comprising an inorganically filled matrix layered with a layer of fibers or a second sheet comprising an inorganically filled matrix with a higher fiber content; and the teaching of a sheet comprising an inorganically filled matrix laminated with a wax coating, an acrylic coating or a melamine coating.

In contrast, however, the claims of the present application are not to a sheet comprising an inorganically filled matrix and are not to a laminate with fibers or simply some coating. The claims of the present application are to at least a four-layer film structure with a first thermoplastic film layer, a second film layer, a third film layer and a fourth thermoplastic film layer.

For claim 1, having stated the above points, the Examiner then concludes as follows:

Andersen et al therefore disclose five layers of the film, each film alternately laminated with four layers of polyamide; the laminate therefore comprises a first film layer comprising a first polymer having a surface roughened portion on its external surface, a second film layer comprising adhesive positioned between the second film layer and third film layer which is a polyamide, and therefore a barrier layer, and is positioned between the second film layer and fourth film layer, and a fourth film layer having a second polymer.

Having reviewed Andersen as above, applicant is confused by the Examiner's conclusions.

Andersen does not disclose five layers of film. Regarding a layered structure, Andersen provides general teachings regarding a sheet comprising an inorganically filled matrix possibly laminated to one other sheet or layer. Andersen makes no mention of a five-layer structure. For the Examiner to conclude otherwise is indicative of applying impermissible hindsight analysis with applicant's claims as the recipe. (Furthermore, such a conclusion is indicative of the Examiner's misunderstanding of the claims of the present application, as the claims of the present application are to at least a four-layer, not five-layer, structure.)

Applicant is also confused by the Examiner's conclusion that the five-layer "film" of Andersen is alternately laminated with four layers of polyamide. Such a structure of the Examiner's would seem to be a nine-layer structure as follows:

Sheet comprising inorganically filled matrix
Polyamide
Sheet comprising inorganically filled matrix
Polyamide
Sheet comprising inorganically filled matrix
Polyamide
Sheet comprising inorganically filled matrix
Polyamide
Sheet comprising inorganically filled matrix

Such structure bears no resemblance to the Examiner's next statement regarding the laminate comprising a first film layer, a second film layer, a third film layer and a fourth film layer, and such a structure bears no resemblance to the at least four-layer structure of the claims of the present application, as depicted below:

First thermoplastic film layer, comprising a polymer and having a surface-roughened portion
Second film layer, comprising an adhesive
Third film layer, comprising a barrier material
Fourth thermoplastic film layer, comprising a biaxially-oriented polymer and having at least one score-line

For the Examiner to conclude otherwise is, once again, indicative of applying impermissible hindsight analysis with applicant's claims as the recipe.

For claim 1, following these inaccurate conclusions, the Examiner proceeds to discuss biaxial orientation:

Andersen et al fail to disclose a polymer that is biaxially oriented. Notomi et al disclose the biaxial orientation of a sheet of polyvinyl alcohol (polyvinyl alcohol film; column 1, lines 5-12) for the purpose of obtaining polyvinyl alcohol having improved impact resistance compared to a sheet that is not biaxially oriented (column 12, lines 46-54). It therefore would have been obvious for one of ordinary skill in the art to have provided for the biaxial orientation of the sheet of Andersen et al in order to obtain a film having improved impact resistance as taught by Notomi et al.

Applicant assumes that the Examiner is stating that, because Andersen discloses the use of polyvinyl alcohol and Notomi discloses a method for the preparation of a biaxially-oriented polyvinyl alcohol film, Notomi's method of biaxially orienting polyvinyl alcohol film could be used on Andersen polyvinyl alcohol to yield a biaxially-oriented film for Andersen. For several reasons, such a statement is incorrect.

First, Notomi discloses a polyvinyl alcohol *film*, while Andersen discloses polyvinyl alcohol as a possibly component of a ***sheet comprising an inorganically filled matrix***. The polyvinyl alcohol in Andersen is not a film but either an organic binder holding together the inorganic aggregates and fibrous materials of a sheet comprising an inorganically filled matrix or an organic coating material applied to a sheet comprising an inorganically filled matrix:

Finally, suitable synthetic ***organic binders*** that are water dispersable include, for example, polyvinyl pyrrolidone, polyethylene glycol, ***polyvinyl alcohol***, polyvinylmethyl ether, polyacrylic acids, polyacrylic acid salts, polyvinyl acrylic acids, polyvinyl acrylic acid salts, polyacrylimides, ethylene oxide polymers, polylactic acid, and latex (which is a broad category that includes a variety of polymerizable substances formed in a water emulsion; an example is styrene-butadiene copolymer). (Column 24 lines 31-39, emphasis added.)

Appropriate ***organic coating materials*** include melamine, polyvinyl chloride, ***polyvinyl alcohol***, polyvinyl acetate, polyacrylates, hydroxypropylmethylcellulose, polyethylene glycol, acrylics, polyurethane, polyethylene, polylactic acid, polyethylene, Biopol® (a polyhydroxybutyrate-hydroxyvalerate copolymer), waxes (such as beeswax or petroleum based wax), elastomers, polyacrylates, latex, synthetic polymers, including biodegradable polymers, or mixtures thereof. (Column 56 line 62 – Column 57 line 3, emphasis added.)

It is unclear as to, and neither Andersen nor Notomi discloses, the method for biaxially-orienting a liquid material (e.g., a substantially solvated water dispersible organic binder (see Column 23 lines 31-32) or a sprayed, dipped or added coating (see Column 56 lines 47-59).

In either case, the polyvinyl alcohol of Andersen is either in or on a sheet comprising an inorganically filled matrix. This presents the second issue with orienting the polyvinyl alcohol component of Andersen by the method of Notomi. Notomi requires the film be stretched or elongated to a degree not less than 200%:

In order to manufacture film having excellent tensile strength and dimensional stability, it is necessary to increase the degree of molecular orientation to a high level during the biaxial stretching step. For that purpose, the film is stretched not less than two times in each of the machine and transverse directions in the present invention. (Column 8 lines 19-25, emphasis added.)

In sharp contrast, however, the sheet of Andersen may be stretched to a degree up to only about 20% if fresh (i.e., moist) and up to only from about 0.5% to 8% if dry:

The term "elongate" as used in the specification and appended claims with regard to the highly inorganically filled sheet means that the structural matrix of the sheet is capable of being stretched without rupturing and still have a finished surface. In other words, the inorganically filled structural matrix of the sheet is capable of moving or changing shape without rupture by application of a force such as pulling or stretching. The ability of the structural matrix of the sheet to elongate before rupture is measured by an Instron tensile test and a stress strain test. By optimizing the mix design, it is possible to manufacture a sheet which has a structural matrix capable of elongating up to about 20% in the fresh sheet before tearing or rupturing occurs and from about 0.5% to 8% in the dry sheet. (Column 40 lines 50-63, emphasis added.)

If the sheet of Andersen was stretched by the method of Notomi, the sheet of Andersen would be torn and ruptured; the sheet of Andersen would be destroyed and not suitable for any purpose. Therefore, combining Andersen with Notomi is not feasible.

For claim 1, following the discussion regarding biaxial orientation, the Examiner proceeds to discuss score-lines:

Andersen et al also fail to disclose a surface-roughened portion and score line intersecting at least at one axis drawn between the first film layer and fourth film layer when the film is in a lay fiat [sic] condition. However, as stated above, Andersen et al disclose the score lines for bending the film. Therefore, one of ordinary skill in the art would have recognized the utility of varying the position of the score line to obtain the desired bending. Therefore, the bending would be readily determined by through [sic] routine optimization of the position of the score line by one having ordinary skill in the art depending on the desired use of the end product as taught by Andersen et al. It therefore would be obvious for one of ordinary skill in the art to vary the position of the score line, and therefore the degree of intersection, in order to obtain the desired bending, since the bending would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired end result as shown by Andersen et al.



As discussed above, Andersen discloses a score-line for the purpose of bending a sheet comprising an inorganically filled matrix. And Andersen discloses a roughening of the same sheet comprising an inorganically filled matrix. However, as discussed above, Andersen provides no teachings regarding the necessary combination of a surface-roughened portion working and intersecting with a score-line. As discussed above, the sheet of Andersen may be roughened *and/or* it may be scored. Andersen provides no disclosure or teachings requiring both (as in the claims of the present application). Furthermore, as discussed above, Andersen does not teach a first thermoplastic film layer comprising a surface-roughened portion and a fourth thermoplastic film layer comprising a score-line where the surface-roughened portion and the score-line intersect as described in the claims of the present application for the purpose of manually tearing apart a flexible packaging film (and not simply for bending). For these (and other) reasons, a person of ordinary skill in the art could vary the position of the score-line in Andersen through the numerous positions and still not obtain a flexible multilayer packaging film as claimed in the present application. In stating otherwise, the Examiner is applying impermissible hindsight analysis with applicant's claims as the recipe.

From the above review of the Examiner's comments regarding claim 1, the Examiner has failed to cite any prior art teaching a flexible multilayer packaging film comprising a first thermoplastic film layer comprising a polymer and having a surface-roughened portion on an external surface, a second thermoplastic film layer comprising an adhesive, a third film layer comprising a barrier material and a fourth thermoplastic film layer comprising a biaxially-oriented polymer and having at least one score-line on an external surface. This particular multilayer packaging film is a required element of each and every claim of the present application. Additionally, the Examiner has failed to cite any prior art teaching the intersection of the surface-roughened portion and the score-line at at least one axis drawn between the first thermoplastic film layer and the fourth thermoplastic film layer where the axis is perpendicular to the plane of the first thermoplastic film layer and the fourth thermoplastic film layer. This particular arrangement is also a required element of each and every claim of the present application. As the Examiner has failed to cite prior art teaching the required elements of claim 1, applicant respectfully requests that the Examiner withdraw his rejection of claim 1 (and, therefore, each and every claim of the present application which includes the same limitations as claim 1, i.e., claims 2 - 81.)

Following the discussion regarding claim 1, the Examiner proceeds to discuss claims which depend from claim 1. The Examiner's discussion and applicant's response to the Examiner's discussion is below and further illustrates that the Examiner has failed to make a *prima facie* case of obviousness for each of claims 1-67 (and new claims 68-81) of the present application.

For claims 2 and 3, the Examiner states,

With regard to Claims 2-3, Andersen et al discloses no shrinkage; the claimed aspect of 0% shrinkage at 85 degrees Celsius in the machine and transverse direction therefore reads on Gehrke et al. (Emphasis added.)

Applicant is confused as to how claims 2 and 3 read on Gehrke et al. and respectfully requests that the Examiner clarify his statement or withdraw his rejection of claims 2 and 3.

For claim 4, the Examiner states,

With regard to claim 4, as discussed above, the film disclosed by Andersen et al is adhered by adhesive lamination, and therefore comprises a fifth film layer positioned between the third film layer and fourth film layer which comprises an adhesive.

As applicant discussed above, Andersen does not disclose a five-layer film. Andersen discloses a sheet comprising an inorganically filled matrix. As discussed above, Andersen provides very few teachings or enabling disclose regarding multilayer structures. Furthermore, as discussed above, Andersen provides no clear teaching regarding adhesive lamination. Therefore, the applicant respectfully suggests that the Examiner is incorrect in his conclusion and is, once again, applying impermissible hindsight analysis with applicant's claims as the recipe; and applicant respectfully requests that the Examiner withdraw his rejection of claim 4.

For claim 5, the Examiner states,

With regard to Claim 5, Andersen et al disclose a multilayer film having a fourth layer having a score line as discussed above. Andersen et al fails to disclose a score line having a depth of 50-95% of the thickness of the layer. However, Andersen et al teaches that score line for folding, as stated above, and therefore teaches the selection of the depth to obtain desired folding.

As applicant discussed above, Andersen does not disclose a multilayer film. Andersen further does not disclose a multilayer film with a fourth layer having a score-line. Furthermore, applicant is confused as to the Examiner's statement that because Andersen teaches a score-line for folding, Andersen also teaches the selection of depth. Other than a conclusory statement, the Examiner has provided no reason for stating that Andersen teaches the selection of depth. Applicant respectfully requests that the Examiner clarify his statement or withdraw his rejection of claim 5.

For claim 8, the Examiner states,

With regard to Claim 8, the claimed aspect of the score line being made by optical ablation is directed to a method limitation and is therefore given little patentable weight.

Regardless of whether making a score-line by optical ablation is of little patentable weight, it is still of patentable weight and is still a limitation to be addressed by the Examiner. Yet, the Examiner has failed to cite any prior art teaching this limitation. Furthermore, this specific limitation is *not* merely a method limitation of little patentable weight, it is a limitation directed to the nature of the material as a thermoplastic film, as opposed to a sheet comprising an inorganically filled matrix. As stated above and as explained in the present application,

As used herein, the term "optical ablation" refers a method of localized vaporization or decomposition of polymeric materials by means of a controlled laser beam which can be used to form a groove or score-line in a thermoplastic materials. . . . As is well know[n], thermoplastic material respond to increased temperature by melting and/or decomposition. Decomposition predominates at temperatures from 50-100° above the materials melting point. In decomposition enough energy or heat is supplied to the thermoplastic material from a laser beam to completely vaporize the regions upon which the beam impinges. (Page 12 lines 13-22 of the original application as filed, corresponding to Paragraph 52 of the original application as published, emphasis added.)

Each type of laser emits its own specific and characteristic wavelength, i.e., one of a well defined frequency depending on the lasing medium employed. Carbon dioxide (CO.sub.2) lasers can also be tuned to a wavelength within a predetermined range. The wavelength is selected on the basis of the wavelength dependent absorption spectrum of the thermoplastic material to be processed, as well as, available lasing wavelengths of CO.sub.2 isotopes. Preferably, the wavelength is selected on the basis of absorption capacity for a particular thermoplastic material forming a specific layer in a multilayer packaging film. The absorption capacity is a property of thermoplastic materials which may have greatly varying values in different materials. When the wavelength is tuned in such a manner that the material to be processed absorbs most of the laser energy, the materials forming the other layers of a packaging film remain unaffected. (Page 12 line 30 – Page 13 line 10 of the original application as filed, corresponding to Paragraph 53 of the original application as published.)

As explained above, a score-line may be formed by optical ablation, using laser beam wavelengths selected on the basis of the material, particularly thermoplastic material, forming a fourth film layer having a score-line. As such, the method of forming a score-line is not merely a method limitation of little patentable weight but directly related to the nature of the material as a thermoplastic film. The Examiner has failed to cite any prior art teaching this limitation and, therefore, applicant respectfully requests that the Examiner withdraw his rejection of claim 8.

For claim 9, the Examiner states

With regard to Claim 9, Andersen et al disclose a polymer comprising polyamide, as stated above, and therefore disclose a biaxially oriented polymer comprising polyamide.

Applicant is confused as to how Andersen discloses a biaxially oriented polymer comprising polyamide, especially considering the Examiner's earlier statement of "Andersen et al fail to disclose a

polymer that is biaxially oriented." Therefore, applicant respectfully requests that the Examiner clarify his statement or withdraw his rejection of claim 9.

For claims 10 and 11, the Examiner has failed to provide any reason for their rejection.

Therefore, applicant respectfully requests that the Examiner withdraw his rejection of these claims.

For claims 12 and 13, the Examiner states,

With regard to Claims 12-13, the barrier material disclosed by Andersen et al is a polyamide, which is identical to the claimed barrier material, and therefore has an oxygen transmission rate of 0.01-1.00 cm<sup>3</sup>/100in<sup>2</sup> and the claimed vapor transmission rate.

However, Andersen makes no mention of polyamide as a barrier material, makes no mention of oxygen transmission rate and makes no mention of water vapor transmission rate. As stated above, Andersen's teachings as to polyamide are limited to a mention of "nylon sheets" in claim 49. Polyamides (or nylons) have uses other than as barrier materials. For example, nylon is used in women's stockings, which are, obviously, neither an oxygen nor a water vapor barrier. Therefore, applicant respectfully suggests that the Examiner is wrong in his conclusion and is, once again, applying impermissible hindsight analysis with applicant's claims as the recipe; and applicant respectfully requests that the Examiner withdraw his rejection of claims 12 and 13.

For claim 17, the Examiner states,

With regard to Claim 17, Andersen et al disclose an adhesive that is a cold-seal adhesive, because a laminate is disclosed, therefore, adhered to any surface of the layers.

Applicant is confused by the Examiner's statement. Claim 17 states that the **external surface** of the fourth thermoplastic film layer comprises a cold-seal adhesive. As explained in the present application, a cold-seal adhesive is a particularly type of adhesive:

As defined herein, the term "cold-seal adhesive" (also known as a contact adhesive) is one that preferentially adheres to itself or a chemically similar material under pressure or force without the need for significantly elevated temperatures e.g., without the need for temperatures above 50°C. Cold seal adhesives are typically nonadhering or only very slightly adhering to chemically dissimilar surfaces at temperatures of about 15°C to about 50°C. The cold-seal adhesive preferably does not generally stick to uncoated surfaces or to the contents placed inside the package. When placed against each other, cold-seal adhesives typically require moderate pressure (such as that exerted by fingertip pressure) to achieve a bond without the application of significantly elevated temperatures. This is, packages may be sealed at room temperature, i.e., about 20°C. to about 30°C., and even lower, e.g. 15°C, as well as at temperatures of up to about 50°C., if the packaged product is not sensitive to such temperatures. Thus a cold-seal adhesive as used herein is one that does not require elevated temperatures, i.e., above about 50°C., for activation of its adhesive characteristics. This may include, however, cold-seal adhesives that can be hot melt coated, but that do not require the application of heat to form a seal. A specific example of a cold-seal adhesive is supplied by Rohm and Haas Company, Philadelphia, Pa., U.S.A., and are [sic] sold under the trade name Coseal™ 30061A. (Page 11 lines 14-30 of the original application as filed, corresponding to Paragraph 49 of the original application as published.)

And a cold-seal is a particularly type of seal:

As defined herein, the term "cold-seal" refers to the union of a surface (or portion thereof) of one film to a surface (or portion thereof) of another film or of two different portions of a surface of the same film by means of a cold-seal adhesive. (Page 12 lines 1- 3 of the original application as filed, corresponding to Paragraph 50 of the original application as published.)

As described in claim 17 and in the excerpts above, the cold-seal adhesive, being on the **external surface** of the fourth thermoplastic film layer, is not used for adhesive lamination. As discussed above, Andersen provides no clear teaching regarding adhesive lamination, let alone adhesive lamination using a cold-seal adhesive; yet, even if Andersen did provide such teaching, it would be irrelevant to claim 17, for, as described in the excerpts above, adhesive lamination is not the anticipated use of the cold-seal adhesive in claim 17 of the present application. Therefore, applicant respectfully requests the Examiner clarify his statement. In the alternative, applicant respectfully suggests that the Examiner is wrong in his conclusion and is, once again, applying impermissible hindsight analysis with applicant's claims as the recipe, and applicant respectfully requests that the Examiner withdraw his rejection of claim 17.

For claims 18 and 19, the Examiner states,

With regard to Claim 18-19, the layers disclosed by Andersen et al have internal and external surfaces as discussed above.

Once again, applicant is confused by the Examiner's statement. Claim 18 states that the first thermoplastic film layer is an outer film layer, and claim 19 states that the fourth thermoplastic film layer is an inner film layer. Neither claim 18 nor claim 19 makes any mention of an internal or external surface, as stated by the Examiner. Therefore, applicant respectfully requests the Examiner clarify his statement or withdraw his rejections of claims 18 and 19.

For claim 20, the Examiner states,

With regard to Claim 20, the film disclosed by Andersen et al has a thickness of 0.75 3.5 [sic] mils (column 41, lines 60-65).

Column 41 lines 60-67 of Andersen state,

The sheets of the present invention may be designed to have greatly varying thicknesses; however, most products requiring a thin-walled material will generally have a thickness in the range from about 0.01 mm to about 3 mm. Nevertheless, in applications where insulation ability or higher strength or stiffness is more important, the sheet thickness may range up to about 1 cm.

A thickness of 0.01mm to about 3 mm and up to about 1 cm is equivalent to about 0.394 mil to about 118 mil and up to about 394 mil. Assuming, as the Examiner does (albeit incorrectly), that the sheet of Andersen forms a four-layer structure (as in the claims of the present application), the thickness of

such a four-layer structure would range from 1.576 mil (0.394 x 4) to about 472 mil (118 x 4) and up to 1,576 mil (394 x 4). In contrast, as claimed in claim 20, the at least four-layer structure of the claims of the present application may have a thickness of 0.75 mil to 3.5 mil. Contrary to the Examiner's statement, Andersen does not disclose a "film" having a thickness of 0.75 – 1.575 mil; in fact, with a "four-layer" thickness range of 1.576 mil to 1,576 mil, Andersen, arguably, teaches away from such smaller thicknesses. Additionally, the Examiner has failed to provide any reason, other than impermissible hindsight, for applicant to select a multilayer packaging film having a thickness within the lower range of thicknesses disclosed in Andersen (i.e., 1.576 mil – 3.5 mil). Therefore, applicant respectfully requests that the Examiner withdraw his rejection of claim 20.

For claim 21, the Examiner states,

With regard to Claim 21, the film disclosed by Andersen is oriented as discussed above, and is bent and therefore has an easy opening tear feature and therefore forms a package comprising a tear initiation area and a directional tear zone; the film [sic] is sealable (column 56, lines 9-14) and therefore Andersen et al therefore disclose a packaging have a top first edge seal portion and an opposite bottom second edge seal portion in parallel with the top first edge seal portion and a third seal portion disposed perpendicular between the top first seal edge portion and bottom second seal edge portion and parallel to a folded side and at least one first folded side edge superimposed on the surface roughened portion on an external [sic] surface of the first film layer of the package.

Responding to each point in turn, applicant states as follows:

- "the film disclosed by Andersen is oriented as discussed above". Applicant is confused by this statement. With the exception of the dependency on claim 1, claim 21 includes no further mention of "oriented." However, even if it did, as discussed above, Andersen is not oriented; and combining Andersen with Notomi to obtain an oriented structure destroys Andersen and is, therefore, not feasible. Therefore, applicant respectfully requests that the Examiner clarify his statement. In the alternative, applicant respectfully suggests that the Examiner is wrong in his conclusion and is, once again, applying impermissible hindsight analysis with applicant's claims as the recipe.
- "and is bent and therefore has an easy opening tear feature and therefore forms a package comprising a tear initiation area and a directional tear zone". Applicant is, once again, confused by the Examiner's statement. As discussed above, Andersen teaches a sheet comprising an inorganically filled matrix that may be scored or perforated to form a bend in the sheet. (See Column 7 lines 47-50.) However, the purpose of the score or

perforation is for bending the sheet to form a shape or a container, not to tear the sheet.

As taught by Andersen,

During the subsequent process of forming the sheet into the shape of the desired object, it will sometimes be preferable (depending on the stiffness of the sheet) to remoisten the hardened sheet in order to temporarily increase the flexibility and bendability of the sheet. This is particularly true in the case where the sheet will be rolled or has been scored and is expected to make a particularly sharp bend during a container forming stage. After the sheets are rolled and/or bent into the desired configuration, it may be necessary to glue the ends or seams together using adhesive methods known to those skilled in the art. It may also be necessary in some cases to trim excess material from the final product using cutting means known in the paper or plastic arts. (Column 14 lines 1-14, emphasis added.)

In the absence of significant quantities of such waterproofing agents, water can be used to remoisten the sheet and temporarily increase the flexibility, bendability, and elongation before rupture of the sheet, particularly where the sheet will be formed into another article of manufacture, such as a container. (Column 39 lines 51-56., emphasis added.)

The purpose of the score, score cut, or perforation is to create a location on the inorganically filled sheet where the sheet can be bent or folded. This creates a "hinge" within the sheet with far greater bendability and resilience than possible with an unscored or unperforated sheet. In some cases multiple score cuts or perforations may be desirable. (Column 57 lines 48-53, emphasis added.)

A "clam shell" container (such as those presently used in the fast food industry to package hamburgers) was made by cutting an appropriate blank from a sheet, score cutting the blank to form the desired fold lines, folding the blank into the shape of a clam shell container, and adhering the ends of the folded blank (using both adhesive and interlocking flap means) to preserve the integrity of the container. . . . The sheet is bent or closed together on the side of the sheet opposite the score cut. It should be noted that normal scores in conventional materials generally allow the sheet to more easily bend or close together on the side of the score. . . . A french fry container (such as those used to serve cooked french fries in the fast food industry) was made by cutting an appropriate blank from a sheet, score cutting the blank to form the desired fold lines, folding the blank into the shape of a french fry container, and adhering the ends of the folded blank using adhesive means to preserve the integrity of the container. . . . A frozen food box (such as those used by supermarkets to package frozen foods such as vegetables or french fries) was made by cutting an appropriate blank from a sheet, score cutting the blank to form the desired fold lines, folding the blank into the shape of a frozen food box, and adhering the ends of the folded blank using adhesive means to preserve the integrity of the box. . . . A cold cereal box was made by cutting an appropriate blank from a 0.3 mm thick sheet, score cutting the blank to form the desired fold lines, folding the blank into the shape of a cold cereal box, and adhering the ends of the folded blank using adhesive means to preserve the integrity of the cereal box. (Column 67 line 64 – Column 68 line 35, emphasis added.)

As clearly stated in Andersen, the purpose of the bend is for bending the sheet to form an object with the sheet, not to "open" the sheet comprising the inorganically filled matrix. In fact, throughout the disclosure, Andersen only once refers to opening a container:

Containers set forth above are placed in a microwave oven and tested for microwave compatibility; that is, they are tested to determine whether the containers themselves, or the food items within them, become hot when a container and food are exposed to microwave radiation. In fact, the containers themselves will remain cool. Because of the low dielectric constant of the material, all of the energy goes into the food not the

container. For the same reason, steam which may condense onto the surface of the container during the initial stages of the microwaving quickly revaporizes under further microwaving. Therefore, when the food container is opened, no condensed steam is on the surface of the container after the microwave process. Any excess steam comes out when the container is opened, leaving food which looks and tastes better. (Column 75 lines 8-23.)

Andersen is silent on the method of opening the container. As explained in the excerpts above, the bend or fold line is used to form the container, not to open the container. For the Examiner to assume the bend is an easy opening tear feature is, once again, indicative of the Examiner applying impermissible hindsight analysis with applicant's claims as the recipe.

-- "the fdm [sic] is sealable (column 56, lines 9-14)". Applicant is, once again, confused by the Examiner's statement. Column 56 lines 9-14 of Andersen read as follows:

It may be preferable to apply coatings or coating materials to the highly inorganically filled sheets prepared according to the processes set forth above. Coatings can be used to alter the surface characteristics of the sheet in a number of ways, including sealing and protecting the sheet or other object made therefrom. (Emphasis added.)

Applicant is confused, as it appears as if the Examiner is incorrect in his understanding of the "sealing" taught by Andersen. Immediately following the passage cited by the Examiner, Andersen further explains, "Coatings may provide protection against moisture, base, acid, grease, or organic solvents." (Column 56 lines 14-15, emphasis added.) Andersen teaches uses a coating to seal and protect a sheet comprising an inorganically filled matrix. As exemplified in Andersen,

The layer of wax completely seals the surface of the cup to moisture and renders it watertight. (Column 70 lines 32-33, emphasis added.)

Similar to the wax in Example 70, the layer of acrylic coating completely seals the surface of the cup to moisture and renders it watertight. (Column 70 lines 45-47, emphasis added.)

As in Examples 70 and 72, the layer of melamine coating completely seals the surface of the cup to moisture and renders it watertight. (Column 70 lines 57-59, emphasis added.)

Cold cups made according to Examples 46, 47, and 64 are coated with a totally environmentally benign coating consisting of a mixture of hydroxymethylcellulose plasticized with polyethylene glycol. This coating completely seals the surface of the cup to moisture and renders it watertight. However, the surface looks even more natural and less glossy than cups coated with wax, acrylic, or melamine. (Column 70 line 65 – Column 71 line 4, emphasis added.)

Cold cups made according to Examples 46, 47, and 64 are coated with a totally environmentally benign coating consisting of polylactic acid. This coating completely seals the surface of the cup to moisture and renders it watertight. (Column 71 lines 8-11, emphasis added.)



Cold cups made according to Examples 46, 47, and 64 are coated with a totally environmentally benign coating consisting of soy bean protein. This coating completely seals the surface of the cup to moisture and renders it watertight. (Column 71 lines 14-17, emphasis added.)

Andersen uses "sealing" in a completely different context than the "seal" of claim 21.

In the present application, "seal" is not related to protecting a substrate but to joining a substrate with itself or another substrate. As defined in the present application, a seal is "the union of a surface (or portion thereof) of one film to a surface (or portion thereof) of another film or of two different portions of a surface of the same film." (See Page 12 lines 1-12 of the original application as filed, corresponding to Paragraphs 50 and 51 of the original application as published.) Considering the teachings of Andersen, for the Examiner to assume that the "sealing" of Andersen is similar to the "seal" of the claims of the present application is an incorrect assumption and, once again, indicative of the Examiner applying impermissible hindsight analysis with applicant's claims as the recipe.

-- "and therefore Andersen et al therefore disclose a packaging have a top first edge seal portion and an opposite bottom second edge seal portion in parallel with the top first edge seal portion and a third seal portion disposed perpendicular between the top first seal edge portion and bottom second seal edge portion and parallel to a folded side and at least one first folded side edge superimposed on the surface roughened portion on an external [sic] surface of the first film layer of the package". Applicant assumes that the Examiner draws these conclusions regarding the "packaging" of Andersen because of the Examiner's assumption regarding the "sealing" of Andersen. As discussed above, the Examiner's assumption regarding the "sealing" of Andersen is incorrect; therefore, any conclusions based on such assumption are also incorrect. Furthermore, and as a further indication of the Examiner applying impermissible hindsight analysis with the applicant's claims as the recipe, Andersen makes no mention of the packaging configuration of claim 21. As discussed above, Andersen teaches using a sheet comprising an inorganically filled matrix to form a "clam shell" container, french fry container, frozen food box and cold cereal box. But at no point does Andersen teach a package with a top first seal (as "seal" is defined in the present application) edge portion, an opposite bottom second seal edge portion in parallel with said top first seal edge portion and a third seal portion disposed

perpendicular between said top first seal edge portion and said bottom second seal edge portion and parallel to a first folded side edge, as is included in claim 21 of the present application. Additionally, the Examiner has failed to cite any prior art teaching a first folded side edge superimposed on a surface-roughened portion, as is also included in claim 21.

From the above review of the Examiner's comments regarding claim 21, the Examiner has failed to cite any prior art teaching the particular structure of claim 21, teaching a tear-initiation area comprising a surface roughened portion or teaching a directional tear zone comprising at least one score-line.

Therefore, applicant respectfully requests that the Examiner withdraw his rejection of claim 21.

For claims 22 and 23, the Examiner states,

With regard to Claims 22-23, Andersen et al disclose a cold-seal as discussed above, and therefore disclose a top first seal edge portion and bottom second seal edge portion comprising a cold-seal adhesive.

Claim 22 states that the top first seal edge portion, the bottom second seal edge portion or the third seal edge portion of the package of claim 21 includes a cold-seal. As explained above, in the present application, a cold-seal adhesive is a particularly type of adhesive and a cold seal is a particular type of seal. As discussed above, Andersen does not disclose a cold-seal as Andersen provides no clear teaching regarding adhesive lamination, let alone adhesive lamination with a cold-seal adhesive and let alone cold seal. Regarding claim 22, applicant respectfully suggests that the Examiner is wrong in his conclusion and is, once again, applying impermissible hindsight analysis with applicant's claims as the recipe; and applicant respectfully requests that the Examiner withdraw his rejection of claim 22.

Regarding claim 23, applicant is, once again, confused by the Examiner's statement. Claim 23 states that the top first seal edge portion, the bottom second seal edge portion or the third seal edge portion includes a **heat seal**. The Examiner has failed to cite any prior art teaching the limitation of a heat seal; therefore, applicant respectfully requests that the Examiner withdraw his rejection of claim 23.

Paragraph 3 of the November 13, 2008 Office Action states that Claims 14-16 and 24-67 are rejected under 35 USC §103(a) as allegedly being unpatentable over Andersen in view of Notomi and further in view of Gehrke (US Patent 5783,266) (Gehrke) (with Gehrke apparently being relied upon solely for the disclosure regarding a metallic coating).

The Examiner then states, "Andersen et al and Notomi et al disclose a multilayer film having a barrier layer comprising polyamide as discussed above." As discussed above, however, Andersen

and Notomi do not disclose such a film; and the Examiner appears to be relying on Gehrke solely for disclosure regarding a metallic coating and not for any claim limitations also allegedly (yet incorrectly) taught by Andersen and/or Notomi. Therefore, the Examiner has still failed to cite any prior art teaching the limitations of each of claims 1-67 (and of each of new claims 68-81), and applicant respectfully requests that the Examiner withdraw his rejection of these claims.

Nevertheless, applicant wishes to discuss some of the Examiner's conclusions regarding Andersen in view of Notomi and further in view of Gehrke.

In Paragraph 3 of the November 13, 2008 Office Action, the Examiner states,

One of ordinary skill in the art would therefore have recognized the advantage of providing for the metallic coating of Gehrke in Andersen et al and Notomi et al, which comprises a multilayer film, depending on the desired barrier to oxygen and moisture of the end product. It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for a metallic coating on the external surface of the layers in Andersen et al and Notomi et al in order to obtain a film that is a barrier to oxygen and moisture as taught by Gehrke. (Emphasis added.)

Applicant is confused by the Examiner's statement (as emphasized above) of "which comprises a multilayer film." It is unclear as to which particular "which" the Examiner is referring. Is the Examiner stating that Andersen discloses a multilayer film? If so, as discussed above, the Examiner is incorrect in his conclusion, as Andersen provides very few teachings or enabling disclosure regarding a multilayer structure; furthermore, any "multilayers" in Andersen include a sheet comprising an inorganically filled matrix, which is, arguably, not a film. Or, is the Examiner stating that Notomi discloses a multilayer film? If so, applicant respectfully requests that the Examiner provide a specific reference in Notomi disclosing such a film, as applicant is unable to find any reference to a multilayer film in Notomi. Furthermore, the Examiner has cited no specific teaching or suggestion for adding a metallic coating to Andersen in view of Notomi. As discussed above (in regard to claims 12 and 13), Andersen makes no mention of a barrier material, makes no mention of oxygen transmission rate and make no mention of water vapor transmission rate. Andersen provides no motivation or reason for adding a metallic coating as a barrier to oxygen and moisture, and the Examiner has only provided mere conclusory statements for doing so. As stated by the Federal Circuit in In re Kahn, "Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." (78 USPQ2d 1329, 1336 (Fed. Cir. 2006), quoted with approval in KSR International co. v. Teleflex, Inc., 82 USPQ2d 1385, 1396 (2007).)

In Paragraph 3 of the November 13, 2008 Office Action, the Examiner then continues,

Gehrke fails to disclose a metallic coating having a thickness from 200-700 Angstroms. However, Gehrke teaches the selection of coating depending on the desired strength (column 7, lines 53-60). Therefore, one of ordinary skill in the art would have recognized the utility of varying the thickness to obtain the desired strength. Therefore, the strength would be readily determined by through [sic] routine optimization of the thickness by one having ordinary skill in the art depending on the desired use of the end product as taught by Gehrke. It therefore would be obvious for one of ordinary skill in the art to vary the thickness in order to obtain the desired strength, since the strength would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired end result as shown by Gehrke.

The circular nature of the Examiner's argument notwithstanding, applicant respectfully submits that the Examiner is incorrect in his interpretation of Column 7 lines 53-60 of Gehrke. This section of Gehrke reads as follows:

Throughout this specification, reference is made to multilayer structures, inner wrappers, film structures and sheet materials. These structures are the same thickness as conventional structures used for similar packaging applications. Typical thicknesses of films and film structures can range from about 0.25 mils to 2.0 mils preferably about 0.75 to about 1.5 mils. Films thinner than about 0.25 mils may not have the strength necessary to perform the required function. (Emphasis added.)

In this section, Gehrke discloses the total thickness of the entire multilayer sheet material structure. This entire structure includes an outer layer, an inner layer and a core (barrier) layer. (Column 4 lines 24-25.) This section makes no specific mention of the thickness of the barrier layer itself. For the Examiner to state otherwise is indicative of the Examiner, once again, applying impermissible hindsight analysis with applicant's claims as the recipe.

### III. CONCLUSION

Throughout the May 13, 2008 the Examiner has applied hindsight analysis with applicant's claims as the recipe to find the claim limitations of the present application in the cited prior art. Such analysis is impermissible. As stated by the Federal Circuit in Orthopedic Equipment Company, Inc. et al. v. United States,

It is wrong to use the patent in suit as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit. Monday morning quarterbacking is quite improper when resolving the question of nonobviousness in a court of law.

(217 USPQ 193, 199 (Fed. Cir. 1983), emphasis added.) And, as further stated by the Court in KSR,

A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning. See Graham v. John Deere Co. of Kansas City, 148 USPQ 459 (1966); 383 U.S., at 36 (warning against a "temptation to read into the prior art the teachings of the invention in issue" and instructing courts to "

'guard against slipping into the use of hindsight' (quoting *Monroe Auto Equipment Co. v. Heckethorn Mfg. & Supply Co.*, . . . 141 USPQ 549 (CA6 1964))).

(KSR, 82 USPQ2d at 1397, emphasis added.)

Without applying impermissible hindsight analysis, the Examiner has failed to cite prior art that teaches the limitations of the current claim set. As stated by the Federal Circuit in In re Lowry, "The Patent and Trademark Office (PTO) must consider all claim limitations when determining patentability of an invention over the prior art." (32 USPQ2d 1031, 1034 (Fed. Cir. 1994), citing In re Gulak, 217 USPQ 401, 405 (Fed. Cir. 1983).) (See also In re Royka and Martin, 180 USPQ 580, 583 (CCPA 1974) (Obviousness requires suggestion of all limitations in a claim.)) Andersen or Andersen in view of Notomi or Andersen in view of Notomi and further in view of Gehrke does not teach or suggest all the claim limitations of each claim of the present application. As such, claims 1 - 81 are patentable over Andersen and Andersen in view of Notomi and Andersen in view of Notomi and further in view of Gehrke. Applicant respectfully requests the Examiner withdraw his rejections and allow each of claims 1 - 81.

If a telephone conference would expedite allowance of the claims, the Examiner may contact the applicant via applicant's attorney at (920) 303-7970.

Respectfully submitted,

Date: May 13, 2009

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